

Language documentation in the aftermath of the 2015 Nepal earthquakes: A guide to two archives and a web exhibit

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We describe two institutionally related archives and an online exhibit representing a set of Tibeto-Burman languages of Nepal. These archives and exhibit were built to house materials resulting from documentation of twelve Tibeto-Burman languages in the aftermath of the 2015 Nepal earthquakes. This account includes a detailed discussion of the different materials recorded, and how they were prepared for the collections. This account also provides a comparison of the two different types of archives, the different but complementary functions they serve, and a discussion of the role that online exhibits can play in the context of language documentation archives.

1. Introduction¹ The field of documentary linguistics has made use of a wide array of increasingly sophisticated computing technologies in recent years in order to archive, catalogue, and ultimately preserve vast quantities of audio, video, and text materials from endangered and vulnerable languages for future access by community members and scholars alike. Notable examples of data archival repositories, hosted and managed by higher educational institutions and museums, include the Endangered Languages Archive (ELAR, <https://www.soas.ac.uk/elar/>), hosted and managed by the School of Oriental and African Studies at the University of London; the Pacific and Regional Archive for Digital Sources in Endangered Cultures (PARADISEC, <http://www.paradisec.org.au/>), directed by steering committees and co-hosted at three Australian universities; the Archive of Indigenous Languages of

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Latin America (AILLA, <https://ailla.utexas.org/>), hosted and managed by the University of Texas; and the Native American Languages collections of the Sam Noble Museum at the University of Oklahoma (<http://samnoblemuseum.ou.edu/collections-and-research/native-american-languages/>).

It is the most common scenario that the archival process begins with the researcher and/or community activist (along with colleagues and differing degrees of community involvement), working to record language data from a single language, from a variety of speech community representatives, and representing different genres and contexts of use. Once documentation (audio, video, field notes, word lists, discourse exemplars including oral performances, interviews, and surveys) and data preparation (file organization, transcription, and annotation) have been completed, these materials are sent to a repository, which will “ingest” the materials for long-term storage and preservation. Access to these materials by different users can be controlled and restricted according to community (and possibly researcher) concerns and considerations.

This is an account of two archives representing a set of Tibeto-Burman languages of Nepal. It should be noted from the outset that many other Tibeto-Burman languages have archival representation. The largest array of collections can be found with ELAR (Baram, Gyalsumdo, Kaiké, Koyi Rai, Magar, Mewahang, Nar-Phu, Kagate/Syuba, Surel, Tamang, Thangmi, and Yakkha). See Gawne (2018) for a detailed description of the Syuba archive at ELAR, including documentation and data preparation methods and conventions, and also future plans for the materials. Several Tibeto-Burman languages of China, Nepal, Bhutan, India, and Pakistan are also stored at ELAR.²

This account describes a somewhat different archival endeavor in that the focus of documentation in the funded project that contributed to the archives was not a comprehensive overview and resulting collection of one single language (or even a set of languages from a fixed region), but rather, the goal was to collect as many instances as possible of a particular type of language use (survivor narratives) from speakers across myriad Tibeto-Burman ethnolinguistic communities representing multiple geographical regions of Nepal at a single point in time. Specifically, the documentation efforts and activities behind the archives and web exhibit that we describe in this paper arose from the two massive earthquakes that severely impacted parts of Nepal in April and May, 2015. Shortly after these catastrophic events, with RAPID (Rapid Response Research) support from the National Science Foundation, a team of sixteen research partners established a plan to record the lived experiences of the survivors. The team worked across four affected areas in central Nepal and the nation’s capital, Kathmandu, to ask survivors and responders to recount their reactions at the time of the events, and also to describe what they know about earthquakes in a more general way, based on their lifelong experiences and belief systems. These accounts, collected in the form of free narrative-type discourses and also semi-structured interviews between mother-tongue speakers of the target languages (audio-video), along

²Other smaller sets of Tibeto-Burman collections can be found at PARADISEC (Hyolmo, Langtang, and Syuba), at Kaipuleohone at the University of Hawai’i (<http://scholarspace.manoa.hawaii.edu/handle/10125/33422>), and with the Language Archive at the Max Planck Institute for Psycholinguistics (Puma and Chintang) (<https://tla.mpi.nl/resource/dobes-archive/>).

with accompanying materials (still images, field notes, interview transcripts, phonetic transcriptions, and interlinear morphological annotations, as well as project derivatives such as manuscripts, talks, datasets, and application materials) have been housed in two different archival repositories. One of these is at the University of Virginia's (henceforth, UVA) Tibetan and Himalayan Library (henceforth, THL), and another is housed at the administrative home institution of Southern Illinois University Edwardsville (henceforth, SIUE). Also constructed and housed at SIUE is a web exhibit, which brings the different pieces of the two archives together and provides additional ethno-linguistic, geographic, geological, historical, and political context surrounding the earthquakes and their aftermath.

The archives in this account provide several unique opportunities for continued linguistic and cultural discoveries. In principle, archives do not try to comprehensively and equally represent all dimensions of a language. Rather, the goal is to store valuable materials or else organize a set of materials around a central theme. But for many languages, most of which are vulnerable or endangered according to the EGIDS³ scale (Lewis & Simons 2010), an archival collection still often represents the first (and perhaps only) major collection of transcribed, translated, and annotated materials with adequate linguistic, situational, and technical metadata, including access to original audio and video. In this case, the materials cluster around a central set of themes, namely the narration (monologic, dialogic) of survival, in a set of languages for which there is otherwise very little published linguistic-structural or discourse-interactional description or data.

The original proposed impact of this instance of documentation and archiving was for the materials to allow for an exploration of a discourse genre that has barely been examined (see e.g., Cox et al. 2008 for media accounts of disaster narration; Hansen 2006 and Baker et al. 2008 for refugee and foreign policy narratives). Our initial plan also was that the documentation would allow for further research to address questions of how survivor experiences map onto the physical world, and how this is linguistically encoded in terms of source (origin of the force behind the event), emotional experience (the location of the survivor at the time), the reaction to that experience (location or movement afterwards), and also the priorities identified by the experiencers (what to repair, whom or what force to turn to for assistance).⁴ As this account articulates in later sections, in addition to fulfilling these original goals, this documentation project has also opened up doorways for other types of impact, and the focus in this paper is on the construction of companion archives to house different types of materials, and an online exhibit to tie the archives and larger project activities and historical and regional contexts together.

The organization of this account is as follows: We provide a basic linguistic and historical context of Nepal leading up to and in the immediate aftermath of the 2015 earthquakes in §2. In §3, we describe the project initiation and set-up in summer and fall of 2015. In §4, we turn to a detailed discussion of the different types of

³EGIDS stands for the 'Expanded, Graded, Intergenerational Disruption Scale' of language vitality.

⁴By virtue of a second National Science Foundation Research Experiences for Undergraduates supplement, P.I. Hildebrandt is now working with a new undergraduate research assistant to examine the linguistic encoding of both causality ("why?") and consequence ("what next?") in these materials.

materials that were recorded and how they were prepared for the collections. §5 provides a comparison of the UVA and SIUE archives and also a description of the web exhibit housed at SIUE. §6 includes a discussion of challenges that arose in this unique documentation scenario, as well as benefits deriving from the efforts, and future work yet to be done. §7 closes with future initiatives.

2. The linguistic and historical context

2.1 The linguistic situation of Nepal With over one hundred languages from four major families (and at least one isolate), and a similarly high number of caste-clan and ethnic groupings, Nepal is a country of undisputed ethno-linguistic diversity (Gurung 1998; Kansakar 2006; Central Bureau of Statistics 2012). It is also a country of increasingly rapid social, cultural, political, and economic change with ensuing geographic movement and language displacement (Tumbahang 2012; Angdembe 2013; Rai 2013).

Mustang, Manang, and Gorkha are home to at least fifteen languages from multiple branches of Tibeto-Burman. More recently, Nepali (Indo-European) has become a language of wider communication in these districts (Eppel et al. 2012; Lewis et al. 2015). All of these languages are underrepresented in their range of accessible discourse corpora, and for many of the languages in these regions, no degree of documentation at all is available. The research sites share linguistic, cultural, and environmental similarities, but they are not a monoculture. Due to the changing political and economic landscapes, they all have been impacted by the dominantly Hindu Nepalese national culture, allowing for different levels of Nepali linguistic influence and disruption of intergenerational language transmission. These regions have also all experienced patterns of out-migration in recent years, but at different rates and with distinct temporal and geographic trajectories: Manang and Mustang have seen the greatest rates of depopulation between the 2000 and 2010 census, but with distinct historical and socioeconomic drivers (Craig 2004; 2011; Hildebrandt et al. 2015; Hildebrandt & Krim 2018). Some patterns of migration are driven by the rural-urban movement of children for educational purposes, while others leave their villages to pursue work opportunities (Childs & Choedup 2014).

As noted, most of these languages are either underdocumented or entirely undocumented. A sociolinguistic survey of Mustang includes information on Lowa (Japola et al. 2003). Sketch descriptions of Lowa include Kretschmar (1995) and Nagano (1985). The first dictionaries of Tsum (Donohue & Dhakal 2016) and Nubri (Dhakal 2018) have been released partly as a result of the materials gathered during the project. Beyond the lexicon, grammatical understanding of Kuke, Nubri, and Tsum have not been available until the materials collected for this project began to be analyzed. Manang languages have comparatively more documentation than those in Mustang or Gorkha, although the languages are unevenly represented in the literature. Manange has a wider range of available published descriptive materials (e.g., two grammars with glossaries and a sketch: Hoshi 1986a; 1986b; Hildebrandt 2004; Hildebrandt & Bond 2017; a dissertation: Hildebrandt 2003; and two accounts of

Nepali contact-induced language change: Hildebrandt 2007; 2009). The Nar variety of Nar-Phu also has a growing publication base (e.g., Mazaudon 1997; Bond & Hildebrandt 2011; Hildebrandt 2013; Noonan & Hildebrandt 2017), while Phu is virtually undocumented, save for Hildebrandt et al. 2018. What is known about Gurung is largely based on descriptions of varieties spoken outside of Manang (e.g., descriptions of Kaski Gurung: Glover 1970a; 1970b; 1974; Glover et al. 1977; a study of dialect variation: Glover & Landon 1980; a description of Syangja Gurung: Nishida 2004; 2015).

2.2 The Nepal earthquakes of April and May, 2015 On April 25, 2015, a major earthquake rocked the country, causing extensive damage and loss of life in the Kathmandu valley, and also in a number of political districts to the east and to the west of the capital. About three weeks later, on May 12, 2015, an aftershock of almost similar magnitude compounded this death and destruction, toppling already-damaged buildings and causing several fatal landslides in various parts of the country. The earthquake impacted several political districts on a roughly west-east trajectory throughout the country, including Lamjung, Gorkha, Mustang, Tamahu, Kaplibastu, and Arghakhanchi (west of Kathmandu) and Chitwan, Sindhupalchok, and Rasuwa (east or south of Kathmandu).⁵ Langtang village was completely wiped out in a landslide during the April earthquake (an archive in memory of those who perished may be accessed at the Langtang Memory Project: <https://www.langtangmemoryproject.com/>). Mt. Everest Base Camp also experienced fatal landslides.

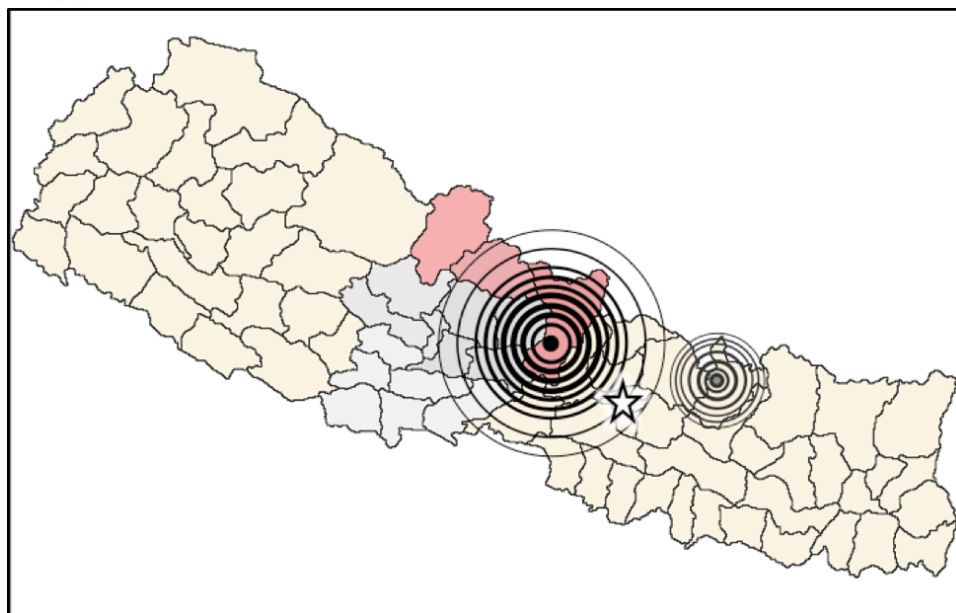
Emergency rescue crews and international aid raced to Nepal following the earthquakes, which measured 7.8 and 7.3 on the Richter scale, and which caused the loss of nearly 9,000 lives and 22,000 injuries. However, as is frequently observed in the aftermath of other disasters such as Hurricanes Andrew in 1992 and Katrina in 2005, as well as the 2005 Boxing Day Tsunami and the Tōhoku, Japan Tsunami of 2011, the human energy of response focused primarily on addressing medical and infrastructural needs. The project organizers realized that without fast action to document survivors' experiences and voices, their nuanced stories would risk being amalgamated into more generalized narratives, homogenized as the many facets of the tragedy were reduced to digestible soundbites and iconic images in the media. The project co-directors, two anthropologists and two linguists with a long history of professional relationships and work in Nepal, constructed an interdisciplinary project to address these understudied dimensions of disaster response.

Because of the project team's history and established contacts in specific locations of Nepal, and because there was only a small window of time in which to gather the data, the team's decision was to focus on three locations in particular: Gorkha, Manang, and Mustang Districts. These three districts represent a continuum from less impacted (Manang), to moderate impacts in specific locations (Mustang), to very heavily impacted with loss of life. All sites are located in high mountain valleys on the borderlands between Nepal and Tibet. In Figure 1, Mustang, Manang, and Gorkha (west to east) were all close to the epicenter of the April 25 earthquake (black circles),

⁵The earthquakes also impacted or were felt in India, China, and Bangladesh.

which also hit Kathmandu (star). In addition, all districts are home to Tibeto-Burman languages with very little prior documentation.

Figure 1. Mustang, Manang and Gorkha are the pink-shaded districts that are the focus of this documentation initiative. The star represents the capital Kathmandu. (Map produced by Mark Donohue).



The project foundation emerged from the perspective of the survivors, who hailed from diverse linguistic, cultural, and environmental backgrounds, but who all shared a significant common variable: their on-site experiences of the earthquakes. They narrated a shared experience. However, the different individual and community effects of these seismic events, as well as the distinct languages used in these study communities, meant that each speaker overtly and uniquely coded assessments of causality and impact. The data collected, therefore, have had the potential to provide direct insight into cultural and personal attitudes, distinct from similar genres collected elsewhere or at another time. This traumatic and devastating cultural and linguistic situation provided a rare opportunity to study the structural and societal impacts of catastrophic events, lived experiences of trauma, and geographically-driven frameworks for imagining physical and cultural reconstruction.

3. Project initiation and methods

3.1 Original goals and language sample The project had two major aims. First, the project organizers aimed to collect semi-structured *interviews* of people, in their mother-tongues, who experienced the earthquake in different settings, and to analyze their responses, experiences, their post-earthquake roles, and their perspectives

in different locales. In companion to the interviews, the second goal was to collect autobiographical monologic or dialogic *narratives* (also in mother-tongues) to elicit the different cultural interpretations of and responses to the disaster, with an aim to establish whether there is a pattern to how individuals assign causality to the earthquake, and whether these perspectives and assertions were facilitated by local cultural/religious/moral values and linguistic resources. The organizers also wanted the content of these narratives to reveal the lasting impact of this event on residents' perceptions about community traits and local language vitality prospects in an environment of great upheaval.

This project has its origins in a particular genre of discourse analysis: survivor narratives. The knowledge and explanations that people gain and articulate about the world around them have been analyzed primarily from three theoretical perspectives: sociolinguistic, sociocultural, and environmental (Mitchell & Weiler 1991; Wertsch 1991). The sociolinguistic perspective considers the multiple discourses and different voices that construct meaning. The sociocultural perspective includes the beliefs, practices, and traditions that define one's community, even as what constitutes culture itself is changing, contingent, and at times contested. The environmental perspective involves integrating past or distal embodied experiences of place into one's understanding of current, proximal situations, and also the bridge-building and connection-forming practices associated with this. This tripartite model has been used to examine children's experiences and interpretations of Hurricane Andrew in 1992 and to build these interpretations into culturally and emotionally sensitive and respectful science curricula on natural disasters (Lee 1999). A related model was also used to examine survivor and responder impacts after Hurricane Katrina in 2005 (Roach 2008). Our study has modified such approaches by employing these three perspectives to examine the knowledge of and explanations behind the Nepal earthquakes in three ethnolinguistic communities, and to investigate both constants and variation in worldview in terms of causality and consequence.

Because the professional and personal histories of the project directors also coincided with different areas of the country with varying degrees of direct impact from the earthquakes, the primary efforts were focused on three politically distinct regions that were also home to several minority Tibeto-Burman languages. These are outlined here by district, and then summarized in Table 1.

A. Gorkha District: Major portions of Gorkha were severely damaged, so there was the need to work with as many communities as possible. According to project collaborators, Kutang (the lower part of Nubri Valley) and Upper Nubri are linguistically distinct, so the fieldworkers selected a set of villages representing each area and recorded survivor narratives in each village.

B. Manang District: Initial earthquake reports indicated widespread but less intense damage throughout Manang, and no loss of life. The focus was on gathering information from the Manange and Gurung languages, because these speakers could be recruited from Manang and also from diaspora communities living in Kathmandu.

Field researchers also collected information from two residents of ethnolinguistically distinct villages from upper Manang that reported some landslide and agricultural damage: Nar village and Phu village.

C. Mustang District: Like Manang, damage in Mustang was widely spread geographically, but unlike Manang, the damage was more severe in those scattered, affected areas. The team aimed to gather information from speakers of Lowa, and several local varieties of Tibetan. The fieldworkers also encountered Nepali-speaking Mustang residents. These were residents who had lived away from Mustang for many years, but who returned home after the earthquakes to assist with recovery and repairs.

In all, the fieldworkers gathered representative interviews and narratives from speakers of twelve languages (including Nepali), detailed in Table 1. The Glottocodes and ISO 639-3 codes and vitality scales are given as retrieved from *The Ethnologue: Languages of the world* (Simons & Fennig 2018) and from Glottlog (<http://glottolog.org/>), when available. The fieldworkers also interviewed and recorded survivors representing these language communities who resided in the capital Kathmandu at the time of the earthquakes, as they represented valuable diaspora speakers who directly experienced the events and also had a connection to the local communities. In some instances, these diaspora speakers wanted to tell their story, but because they felt insecurities about being recorded in their mother-tongues, they offered their accounts in Nepali.

Table 1. The languages of the project

Language, Glottocode, ISO 639-3	Sub-grouping	District	EGIDS Scale (Lewis & Simons 2010)
Nubri, nubri1241, kte	T-B: Bodish, Gyalsumdo-Nubri-Kyirong	Gorkha	6a Vigorous
Tsum, tsum1240, ttz	T-B: South-Western Tibetic	Gorkha	6a Vigorous
Kutang, kuta1241, ght	T-B: Bodish, Kaikhe-Ghale-Tamangic	Gorkha	6a Vigorous
Gurung, west2414, gvr	T-B: Bodish, Tamangic	Manang	6b Threatened
Manange, mana1288, nmm	T-B: Bodish, Tamangic	Manang	6b Threatened
Nar, nar1239, npa	T-B: Bodish, Tamangic	Manang	6a Vigorous
Phu, nar1239, npa	T-B: Bodish, Tamangic	Manang	6a Vigorous
Lowa, lowa1242, loy	T-B: South-Western Tibetic	Mustang	6a Vigorous
Tibetan, tibe1272, bod	South-Western Tibetic, further classification uncertain	Mustang	Unknown
Baragaon Tibetan, bara1356	South-Western Tibetic, closely related to Lowa	Mustang	Unknown
Dokkeh/'brogs skad	South-Western Tibetic, further classification uncertain	Mustang	Unknown
Tibetan, no known identifiers	uncertain		
Nepali, nepa1254, npi	Indo-European	Kathmandu	1 National

These languages each have multiple endonyms and some brief commentary on classification is in order. In Gorkha, Tsum is variably Tumba or Tsumge. Nubri is sometimes confused as an alternate name for Kutang, or else referred to as Larkye. Kutang is also referred to as Kuke or Kutang Ghale. Additionally, there is some skepticism expressed by project collaborators about the Tamangic affiliation of Kutang, as it shows a number of structural and lexical similarities with Tibetan that are simultaneously distinct from Tamangic.

In Manang, Nar is referred to by its native speakers as Chyprung, and Phu is self-named as Nartwe; Manange is also called Nyeshangte or Nyangmi by native speakers; and Gurung is also called Tamu or Tamu kye by its speakers. Nar and Phu are recognized as dialect variants in *The Ethnologue*.⁶

In Mustang, Lowa is variably referred to as Lhowa, L(h)opa, Lo Montang, Mustangi, Glo Skyad, and Loyu. Co-investigator Sienna Craig also observes that varieties referred to as “Tibetan” in these instances are likely Central Tibetan (Lhasa dialect), which is spoken particularly by those who are local Tibetan language school teachers, and sometimes monastics. She further notes that the Baragaon variety is distinct from Lowa. It is the dialect of southwestern Tibetan spoken among the villages of the Baragaon region (Muktinath Valley, Kagbeni, Lubrak). She observes that it is similar in structure, but the language shows differences in verb endings and in common nouns. Baragaon skad is also distinct from Se skad, spoken in the Shöyul villages (Chuksang, Tetang, Tangbe areas). Additionally, Baragaon shows more influence from Nepali than other Mustang languages do. According to Craig, “Dokke” means ‘brogs skad’ (‘dialect’, typically representing herding communities), and refers to the dialect of Tibetan spoken by the nomads that live near the Nepal-Tibet border. It is more closely connected to central Tibetan than Lowa is.

In addition, not surprisingly, because Mustang and Gorkha in particular lack detailed published information on the distribution of different ethno-linguistic communities, there is some disagreement voiced by the project members as to language vitality and viability in comparison to what is published on *The Ethnologue*. We comment on some of these issues briefly here. In Gorkha, project co-investigator Geoff Childs notes in personal communication that either “threatened” or “shifting” may be a more appropriate designation for Nubri and Kutang, given the level of educational out-migration. Many younger residents of Gorkha are far more adept at Nepali, English, and standard Tibetan, languages of wider communication in Nepal, than with their native languages (those we documented in this project). Those youths who do return and spend considerable time in the village become quite competent, but they are the minority. Co-investigator Mark Donohue observes that Nubri and Tsum both have vigorous speaker bases, but the level of switching to Nepali with younger speakers is impressive.

In Manang, Gurung has approximately 2,000 speakers distributed across lower parts of the district. Beyond that, there are approximately 200,000 Gurung speakers

⁶Nar and Phu are separated here because, although they are grouped together in Glottolog and *The Ethnologue*, there are sufficient differences in lexico-grammatical structures to warrant separate treatment. An example of this may be found in Hildebrandt, Bond, & Dhakal (2018).

across the country. Variables such as average age of speakers, population stability, domains of daily language access, functionality of an orthography, and presence of the language in school curricula suggest that Manang Gurung is “vulnerable” (Hildebrandt & Krim 2018). For Manange, published reports on speaker populations are conflicting, with the Central Bureau of Statistics (2012) reporting under 400 speakers while speaker self-reporting indicates between 3,000 and 5,000. In other cases, Manange is lumped in with Gurung (Gurung 1998; Tumbahang 2012). More recent estimates indicate some 2,000–3,000 active speakers distributed across upper Manang, with roughly the same number of ethnic group members living in Kathmandu and abroad. Not all of these diaspora Mananges are active users of their language, and as such, Manange could be classified as between “threatened” and “shifting”. Nar-Phu has under 600 speakers combined between the two varieties, and it is undergoing rapid shift, as there is a sharp decrease between the number of older people, who are fluent, everyday users, and those younger Nar who have only passive knowledge of the language, or else are exclusive users of Nepali (Hildebrandt 2013).

In Mustang, co-investigator Craig echoes concerns about vitality and viability of languages. She observes factors such as education-driven outmigration, the consolidation of language and identity around central Tibetan among those who migrate and return, and the significant amount of code-switching with Nepali, particularly among younger generations.

3.2 Project personnel organization The project began via collaboration between four scholars based in the USA and Australia (two anthropologists and two linguists) and two linguists from Nepal. The team aimed also to include young, educated individuals who were born and raised in the three districts of focus as community researchers. The team’s plan to train and work with them as research partners reflected concerns about the impacts of (foreign) hierarchy, power, and difference in the elicitation of difficult stories at a fragile time. This fed into the desire to resolve (or at least minimize) aspects of the observer’s paradox and approximate what Leonard & Haynes (2010:269) call “collaborative consultation”, in which academic and community needs are considered in project design and implementation. The project team’s participatory research model is detailed in Childs et al. (2018).

After receiving RAPID funding from the National Science Foundation and IRB clearance from the home institutions, the team set out to train the researchers in the use of recording equipment, metadata collection, and to set up preliminary information and schedules for data transcription and annotation over the next year. The project personnel and their roles are outlined in Appendix 1.

Lead investigator Hildebrandt went to Nepal in June of 2015 (about 8 weeks after the earthquakes, after receiving travel clearance) to train the community researchers and make connections between them and Nepali academic colleagues. By that time, one of the research teams had already gone to the field in Mustang and collected more than two hundred audio interviews with English free translation transcripts. Although this was not part of the original timeline and plan, the project organizers acknowledged their desire to carry out the work. They wanted to return to their com-

munities as soon as possible because they knew their village contexts well enough to understand that in another month or two people would be more focused on rebuilding before the onset of winter than on making time to recall their experiences of the earthquakes. However, the fact that one team had already completed a significant amount of data collection by the time Hildebrandt arrived meant the presence of a non-parallel data set in relation to data collected from the other regions. It also meant that the equipment and informed consent methods class evolved into a one-day, intensive workshop, familiarizing community researchers with recording equipment and interview methods using the first team's fieldwork as examples. The timeline of major activities, including post fieldwork data processing and archiving, is outlined in Table 2, and images from the workshop and from fieldwork can be found in Appendix 4.

Table 2. Project timeline and activities

Dates	Activities	Team Participants
June–July 2015	Fieldworker training in Kathmandu, interview and narrative collection in Kathmandu	Hildebrandt, Nepal-based RAs, Fieldworker team
August–October 2015	Interview and narrative collection in Nepal Districts	Fieldworker team
November 2015–June 2016	Data transfer to and initial transcriptions, data transfer to home institution	Nepal-based RAs, Fieldworker team
July 2016–June 2017	Transcript editing and revision, upload to UVA archive	Hildebrandt and project co-investigators, home institution RAs
July 2017–June 2018	Continued UVA archiving, REU interns build local archive and web exhibit	All co-authors

From November 2015 onward, the project organizers and collaborators also participated in several conference and workshops and co-authored three manuscripts, two of which have been published as of May 2018.

3.3 Data generated From August 2015 onward, project fieldworkers returned to their home communities and recorded survivor narratives. They have provided some images of their fieldwork, presented in Appendix D.

All narratives were recorded using Sony Handycam high definition video recorders, and in some cases, simultaneously with Zoom H1 digital audio recorders. All audio formats accompanying these video narratives were in .wav 44.1 kHz. and 16-bit sampling rate. Some of the Mustang interviews were recorded with locally accessible audio recorders before the equipment purchased with grant funds was available and before the field methods workshop was held, and these were in .wma format. All video narratives were translated into Nepali and English into time-aligned transcripts, and most of them also had morpheme interlinearization added. This was done with

ELAN software.⁷ The original ELAN projects are housed in the SIUE Archive under the appropriate language collections, and .txt formatted versions are included with the archived videos at the University of Virginia. They may be downloaded as separate files or else viewed as time-aligned with the video.

After data collection in the three districts and in Kathmandu, the field researchers worked with the research associates at Tribhuvan University over the next year to transcribe and translate the narratives.

The major datasets generated from the fieldwork can be subdivided into narratives and interviews. Almost all narratives are in audio-video format, and almost all of these also have accompanying time-aligned transcripts. The transcripts were created using ELAN interlinear transcription software, and most of these include a phonetic rendering of the original language, morpheme interlinearization, a Nepali free translation, and an English free translation. The transcripts are archived with the videos in the UVA THL archive, which is described more in §5. The narrative collections are summarized in Appendix 2.

The semi-structured interviews come from Mustang district. The original plan was to collect a set of interviews and also more free-flowing narrative discourses (either monologic or dialogic) from all participants in all three districts. However, due to the timing of the project team assembly in Nepal, it ended up being the case that all interviews and only a small set of narratives came from Mustang residents, while in Gorkha and Manang, all data collected were exclusively narratives. The interview materials, including the original interview questionnaire instrument, are all housed in the SIUE archive (<https://iris.siue.edu/nepal-earthquakes-archive/>), discussed more in §6. The interview collections are summarized in Appendix 3. We should note that one single interview was collected from Gorkha (Nubri), and the audio and transcript files are housed in the SIUE archive.

The project also generated a number of still images taken by the field researchers and during the training workshop, as well as a variety of “derivative materials”, including application materials, manuscripts (draft and pre-proof versions), presentation materials, unpublished datasets, and inventory images of project equipment. These are all housed in the SIUE archive, which is further discussed in §6.

4. The UVA archive The initial plan was to archive all of the audio-video recordings with the University of Virginia’s Tibetan and Himalayan Library special collections. This library makes use of a video and transcript collection infrastructure known as SHANTI (Sciences, Humanities and Arts Network of Technological Incentives). The SHANTI platform is the result of a cross-disciplinary initiative that responds to the call to “promote a culture of innovation and excellence in humanities, sciences and arts within the academic life of the University of Virginia.” (<https://csc.virginia.edu/shanti>). As items are catalogued, depositors may make use of a metadata system of technical and subject terms known as a ‘Knowledge Base’ – which is similar to the Dublin Core Metadata Element Sets (<https://www.dublincore.org/specifications/dublin-core/dces/>) of Creator, Date, Contributor, Availability, and Access (for

⁷ELAN is available for free download (<http://tla.mpi.nl/tools/tla-tools/elan>).

technical metadata), and Element, Coverage, Subject, and Description (for subject metadata), but which focuses on controlled vocabularies and semantic fields associated with peoples, cultures, times, and spaces of Tibet and the greater Himalayan region.

The THL is an appropriate archival venue for these materials. It is integrated into the UVA library system for longevity as an archive. It has streaming server capability, and the transcripts are time-aligned with the media files. It also has a rich technical and content metadata infrastructure, such that information about the content of the narratives and interviews, along with extralinguistic, cultural, and environmental information, can all be encoded for preservation, searchability, and future research. The collection will be freely accessible to anyone with an internet connection, including community members, scholars, disaster prevention and recovery agencies, and the interested public.

The UVA archive was chosen to host the video narratives and companion transcripts as six collections (Nubri, Tsum, Kutang, Lowa, Nar-Phu, and Manange), and this archive was developed with a content management system (CMS) that had already been designed and built by the librarians at the THL. Their platform is based on Drupal, an open source content management software used to make websites and other digital applications and frameworks. The metadata encoding worked with both universal standards and also standards specific to the THL. While these project deposits did pave the way for dialogues between the technicians at UVA and project team members, most work consisted of translation and transcription in ELAN, uploading video and exported ELAN transcripts to the UVA system, and then entering metadata into pre-defined fields.

Preparation of materials for the archive happened at two locations: at Tribhuvan University in Nepal (initial transcription, interlinearization, and translations in ELAN) and at the home institution of SIUE (transcription revisions and export to time-aligned formats suitable to the archive). The second set of tasks took place within SIUE's Interdisciplinary Research and Informatics Scholarship Center (henceforth: the IRIS Center), which is an interdisciplinary facility designed to support that applies digital content as a primary methodology. Student research assistants worked under the supervision of Hildebrandt to correct errors and to format and export the final version of the ELAN projects.

Each language represents a unique collection, and each collection houses multiple narratives plus transcripts. Figure 2 shows an example of a collection home page. The home page describes the collection as a whole: in this case, the context surrounding the collected items, and some background information on the Nubri language and location of Nubri-speaking villages. When available, links to additional references and resources are provided. Each item is represented as a thumbnail image, and titled according to the narrator's name. Additional information for each item includes the time of item creation, the location of the recording, and the duration of each narrative.

Within each collection, the items are catalogued by the narrator's name, as each narrator provided his or her oral consent to be recorded for this project. By clicking on the item, the viewer is directed to a still view of the video and the time-aligned

transcript. The video can be played in its entirety, or individual transcript lines can be clicked on to hear that utterance in isolation. An example of a video and the time-aligned transcript for Dawa Dolma, a speaker of Nubri, is shown in Figure 3.

Figure 2. Home page for the Nubri narratives collection at UVA.

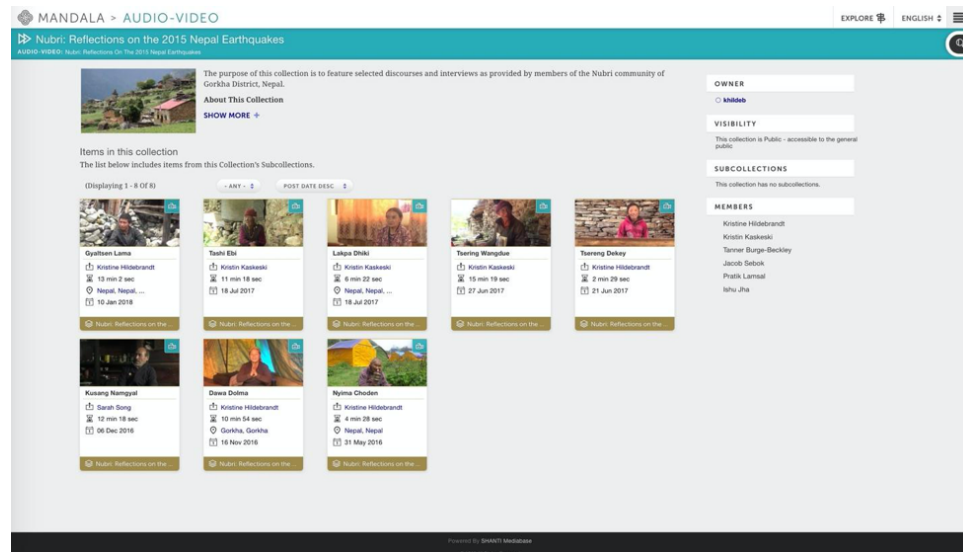
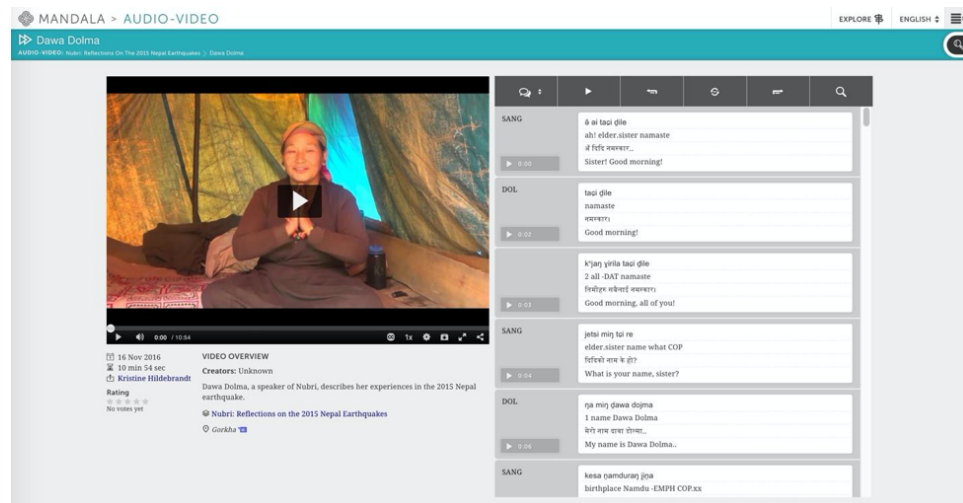


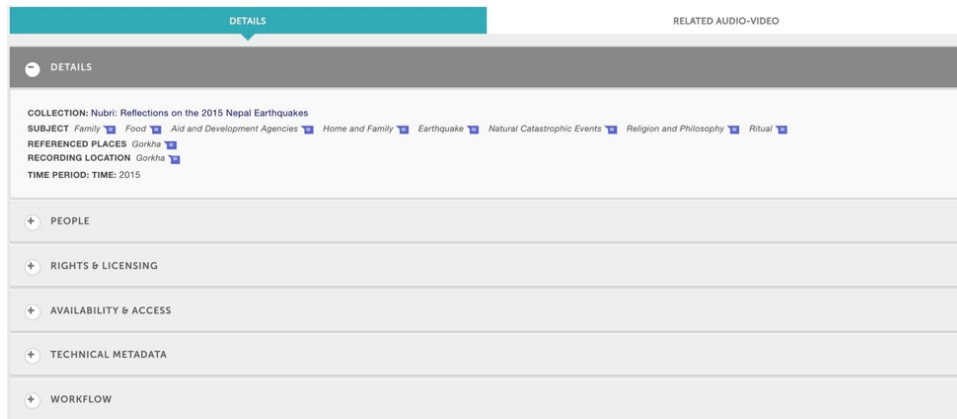
Figure 3. Video and time-aligned transcript for Dawa Dolma (Nubri language).



In the time-aligned transcript in Figure 3, the top line is a phonetic rendering of Nubri (which does not have an orthography); the second line contains a morpho-syntactic interlinearization (following Leipzig Glossing Rules whenever possible); the third line is a Nepali free translation (in Devanagari); and the fourth line is an English free translation. Below the video screen and transcript, the page for each narrative also

provides different types of technical and subject metadata. Each of these boxes is expandable by clicking on it. This is illustrated for Dawa Dolma in Figure 4.

Figure 4. Technical and subject metadata for Dawa Dolma's text.



The 'Details' box has been expanded for the illustration in Figure 4, showing different subject selections that are relevant to Dawa Dolma's narrative specifically.

The six collections may be accessed at the following URLs:

Nubri	https://audio-video.shanti.virginia.edu/collection/nubri-reflections-2015-nepal-earthquakes
Tsum	https://audio-video.shanti.virginia.edu/collection/tsum-reflections-2015-nepal-earthquakes
Kutang	https://audio-video.shanti.virginia.edu/collection/kutang-reflections-2015-nepal-earthquakes
Lowa	https://audio-video.shanti.virginia.edu/collection/lowa-reflections-2015-nepal-earthquakes
Manange	https://audio-video.shanti.virginia.edu/subcollection/manange-reflections-2015-nepal-earthquakes
Nar-Phu	https://audio-video.shanti.virginia.edu/subcollection/nar-phu-reflections-2015-nepal-earthquakes

5. The SIUE archive and web exhibit Because the project planning took place in the context of a RAPID application, and because the timing of the data collection was of utmost importance, the project organizers initially focused on the archiving of the video-recorded narratives and interviews. It turned out that in addition to the audio-video narratives that were gathered from speakers in the three Districts, additional materials were also gathered and generated. These include still images, over 200 audio-recorded interviews in Mustang (including the non-interlinearized, non-time-aligned English transcripts), as well as derivatives surrounding the project, such as manuscripts, presentations, and application materials.

With an awareness that these materials needed long-term storage, in 2017 the lead investigator sought and secured a ‘Research Experience for Undergraduates’ (REU) supplement from NSF to recruit two undergraduate students at the home institution to design and build a digital exhibit to display the project activities, and to archive the additional intellectual and broader impact outputs.

Therefore, from the beginning of this REU internship, the exhibit and archive at SIUE were conceived of differently from the UVA archive. The exhibit was intended as a way to bring the two archival components together, and to share other information about the participants in this work, on related resources, and on the larger geographical, political, and social contexts surrounding the events of 2015. This was also to be a teaching, learning, and mentoring experience for the undergraduate students and the P.I. supervisor. Although we would be making use of a CMS that came packaged with a certain degree of built-in infrastructure, organizations of the archival exhibits (and internally layered collections) would be decided and controlled by the REU team specifically. An anthropology major/linguistics minor and a computer science major joined the project in August 2017. They were tasked with working with the project director to learn about the structure of other digital archives (such as those noted at the start of this account), to conceive of this exhibit and archive infrastructure, and to construct resources that would be complementary to the UVA archive.

To build a hosted exhibit, the interns and director worked with an established CMS which facilitates the heavy lifting of storing, serving, and indexing research materials. There are a variety of choices in the two kinds of CMS installations that were required for accomplishing the project goals: exhibit material management and research content management. WordPress was the choice for the former, and Omeka the latter. Omeka is an open source tool in which data of many format types can be stored, organized, and published to a user-facing front-end site in curated or raw-data exhibits.⁸ WordPress, originally designed to host blogs and similar websites, possesses a user-friendly administrative console and, as such, has evolved into a platform on which many types of sites can be built – in this case, an exhibit that showcases multiple digital resources resulting from this project. Omeka is specifically designed to catalog myriad data types according to strict metadata standards, whereas WordPress is designed for user-friendly, customizable, aesthetically-pleasing construction of non-specific end-products. For these reasons Omeka was chosen as the data structuring tool, and WordPress as the front-end, user-facing project exhibit. Both resources are described in more detail in §5.1–5.2.

Unlike the UVA archive, the SIUE-hosted archive and exhibit were to be built from scratch, as part of a funded undergraduate research experience. As such, we grappled with several considerations in addition to deciding upon our CMS when designing the archive and exhibit resources. Among these was the need to adopt a standardized system for organizing and tagging data and associated metadata. Once adopted, we

⁸Omeka.net costs \$35/year for an individual user subscription. SIUE’s Information Technology Services department has acquired an institutional license for Omeka.org and issued site access to all faculty who request to use it in their classes. It is superior to Omeka.net because it has 50GB of storage space for exhibit files; it allows open-access developer tools; and a single course site can host multiple exhibits. It is also possible to migrate Omeka.net exhibits over to the institutional site.

designed and implemented processes and procedures for populating these repositories to ensure the tenability of maintenance and future growth. Below, we explain in more detail the steps taken in designing and building, as well as populating both the archive and exhibit portions of this project.

5.1 The Omeka archive (<https://iris.siue.edu/nepal-earthquakes-archive/>) The main goals for the local repository were to create an archive to be used for academic purposes, while also creating a public-facing exhibit site for different audiences. We viewed the archive as a digital repository of collections of organized language data and related information gathered during the fieldwork phase of the project, while we intended the exhibit to be a way to put the regions affected by the earthquake, including their respective language diversity and also the survivor experiences, into a broader, publicly-accessible context.

As noted, Omeka is designed with the Dublin Core metadata standard in mind. In analyzing the data, we decided that the “item types” and “information fields” intrinsic to the Dublin Core standard were most appropriate for coding metadata. Similarly, Omeka provides various visual customization options in the form of site ‘themes’. Although Omeka would have been capable of facilitating the exhibit portion of the project, considerations of visual and interface continuity with other projects housed within the home institution’s domain ultimately took priority, and thus we chose to build the exhibit within WordPress, which is a CMS on which most other SIUE IRIS-hosted sites had been constructed.

Omeka has many unique characteristics that both aid and limit the design of an online presentation of primary data. For example, Omeka has various hierarchical echelons within its interface, including the site itself, the exhibit, pages, sub-pages, collections, and items. Using these boundaries, for each region we assigned an ‘exhibit’ and, within these, we created pages to correspond with the types of data collected (e.g., still images, audio files, transcripts, project derivatives). We then created sub-pages for each language in the respective region. The data itself was populated in the form of items organized within collections. This organization is visualized in Figure 5.

Figure 6 shows a view of the Omeka site’s homepage. The user is greeted with the highest hierarchical level of data organization mentioned above, the ‘exhibits’. Here, the user can choose which type of data they are interested in perusing. While not an optimal solution, the organizational architecture of Omeka is such that we chose to place ‘Derivatives’ (application, presentation, and publication materials produced as a result of this research) at the same level as our language ‘Regions’. From this page, the user can choose to select a region, which will present them with the option to look at photos taken of interviewees within that region or to select a language spoken within that region to arrive at a page which houses the interview audio files and transcripts conducted in that language. If the user chooses to select the ‘Derivatives’ page, they will be greeted with ‘Page’-level structures that break the derivatives up into groups of derivative types which include published reports, workshop presentations, and application materials.

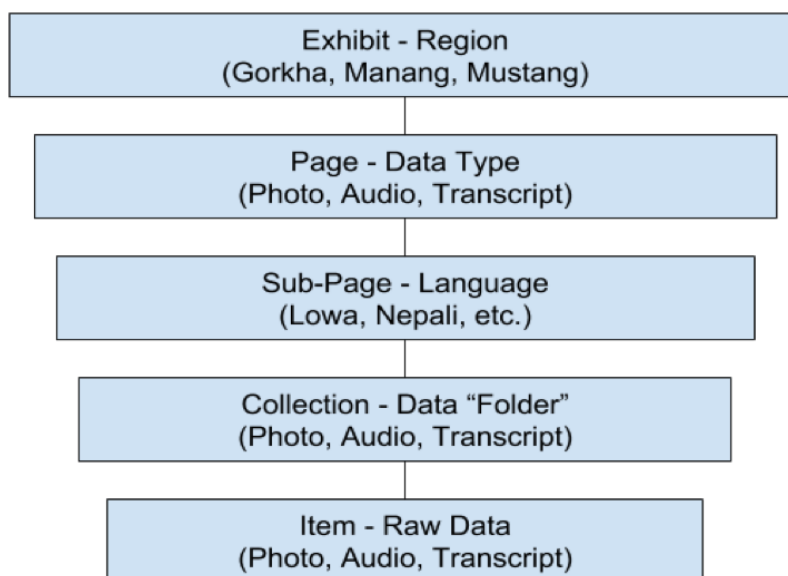
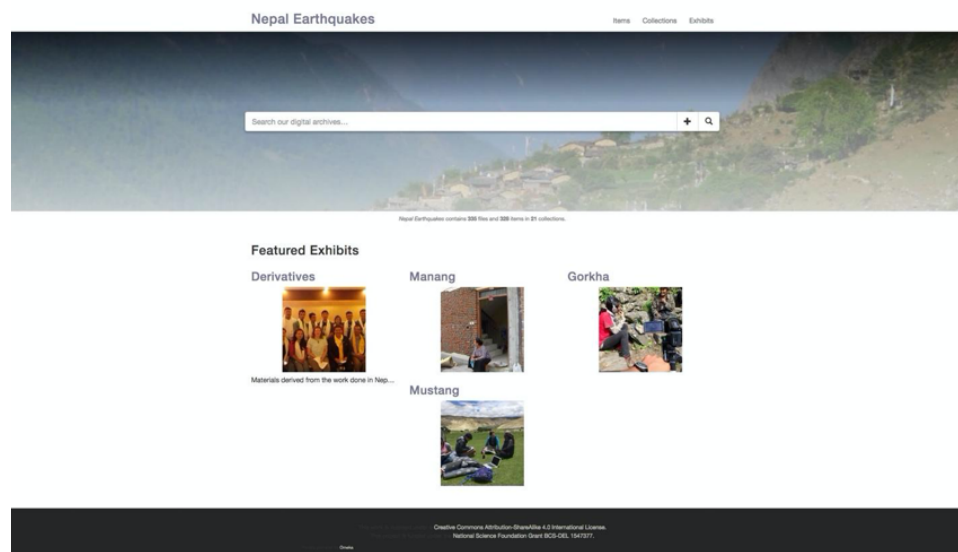
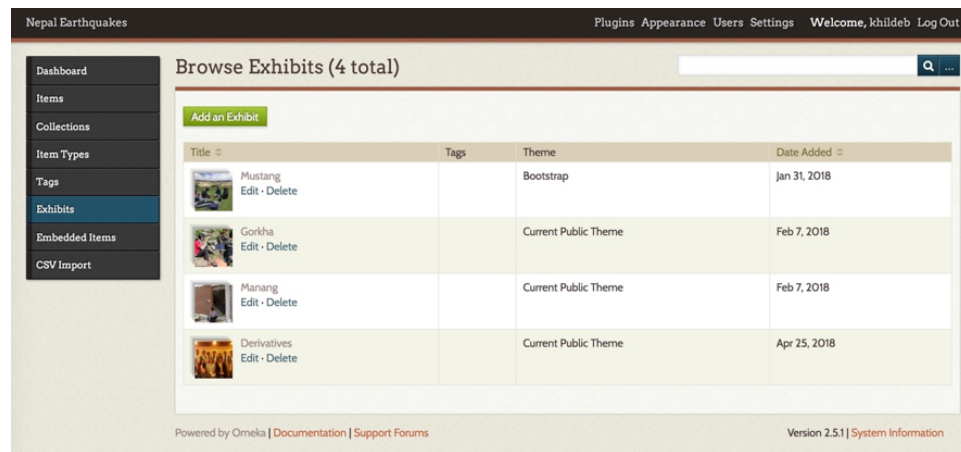
Figure 5. Organizational hierarchy as designated by Omeka's native structures.**Figure 6.** Omeka exhibit level view, public access.

Figure 7 shows a 'dashboard' view of the Omeka cataloguing system, which is presented to those with administrator access upon login and organizes content at the top level by exhibit. This same dashboard is where we created the pages and designated sub-pages through similar processes.

Figure 7. Omeka dashboard view at exhibit level.



Subsequent to the 'sub-page' level in the organization framework is the 'collection' level. The collection is an organizational element within Omeka akin to the concept of a 'folder' in a computer's operating system. Figure 8 shows two such collections within the Mustang exhibit (identified as 'pages' in this administrator view): 'Images' and 'Audio/Transcripts'. The items within a given collection are all grouped according to the same metadata qualities, which in the case of Figure 9 apply to the transcripts ('Audio/Transcripts') for interviews conducted within the Mustang region from Lowa speakers.

Figure 8. The Collection hierarchy within the Mustang exhibit.

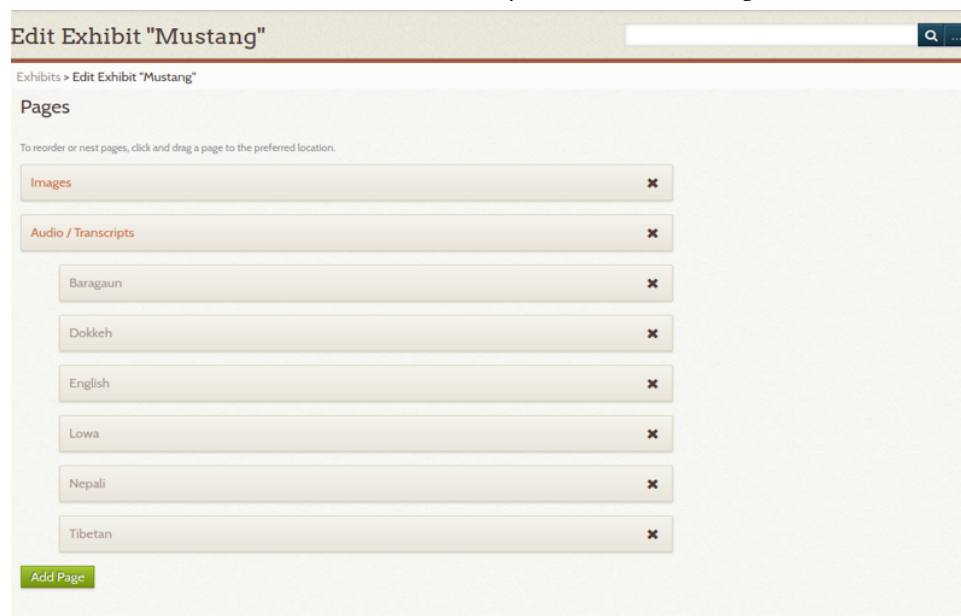


Figure 9. The ‘Collection’ houses the ‘Items’ to be later highlighted in the ‘Exhibit’.

Collection #13: "Mustang - Lova Interview Trans..."

Dublin Core

Title	Mustang - Lova Interview Transcripts
Subject	Effects of 2015 Earthquakes in the Mustang Region of Nepal
Description	Transcripts of an interview with a community member on the 2015 Nepal Earthquakes
Creator	Jacob Sebok
Source	Sienna Craig
Publisher	National Science Foundation / Southern Illinois University Edwardsville
Date	2015
Format	.docx and .odt
Language	English
Type	Interview Transcript
Coverage	2015 Nepal Earthquakes

Recently Added Items

- Mar 30, 2018 Lova_O21_TRANS
- Mar 30, 2018 Lova_O27_TRANS
- Mar 30, 2018 Lova_O28_TRANS
- Mar 30, 2018 Lova_O32_TRANS
- Mar 30, 2018 Lova_O61_TRANS
- Mar 30, 2018 Lova_O72_TRANS

Public: Yes **Featured:** No

Total Number of Items: 37

Contributors: No contributors.

Output Formats: omeka-json, omeka-xml

Figure 10. ‘Item’ metadata for one of the Lova (Mustang) interview transcripts.

Item #860: "Lova_120_TRANS"

Dublin Core

Title	Lova_120_TRANS
Subject	Effects of 2015 Earthquakes in the Mustang Region of Nepal
Description	Transcript of an interview with a community member on the 2015 Nepal Earthquakes
Creator	Jacob Sebok
Source	Sienna Craig
Publisher	National Science Foundation / Southern Illinois University Edwardsville
Date	8-Jul
Contributor	Dachung Gurung
Format	.odt
Language	English
Type	Interview Transcript
Identifier	801_O094.MUL-2015-75
Coverage	2015 Nepal Earthquakes

Text Item Type Metadata

Original Format	.docx
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Prev Item **Next Item**

Public: Yes **Featured:** No

Collection: Mustang - Lova Interview Transcripts

File Metadata: [http://iris.siu.edu/nepal-earthquakes-archive/plugins/ftp/Group8/ODT/Transcripts/MUL-2015-75\(DhujungGurung\).odt](http://iris.siu.edu/nepal-earthquakes-archive/plugins/ftp/Group8/ODT/Transcripts/MUL-2015-75(DhujungGurung).odt)

Output Formats: atom, dcres-xml, json, omeka-json, omeka-xml

Bibliographic Citation: Jacob Sebok, "Lova_120_TRANS," Nepal Earthquakes, accessed May 18, 2018, <https://iris.siu.edu/nepal-earthquakes-archive/admin/items/show/860>.

The items within these collections represent the raw data in the form of photographs, audio records of interviews (.wav, .wma), interview transcripts located within text documents (.docx, .txt), and product derivatives in .pdf format. Figures 9 and 10 juxtapose the metadata options for both collections and items, respectively. In populating the archive with these items, we devised a naming scheme to organize diverse items collected from different researchers at different times and different locations, settling on a hybrid, trinomial scheme that incorporated semantic and numeric values. We first identified interview audio and transcript data according to its associated language. The second portion of each item name is numeric, and is particularly important when associating interview audio files with their respective transcripts. We want users to be able to easily identify the transcript which corresponded to the audio interview they had selected. We ended each item name with the data type – AUD (audio), IMG (image), or TRANS (transcript). Figure 10 shows an example of an interview transcript file located within the Mustang – Lowa Interview Transcripts collection.

With more than a thousand individual data elements (photos, audio files, transcripts, etc.) and fifteen metadata elements for each, manual entry in some cases was impractical. We were able to employ an Omeka-specific plug-in called ‘CSV Import’, which allows the user to capitalize on certain redundant elements within the metadata such as ‘creator’, ‘publisher’, and ‘source’ information by copying and pasting this information immediately into spreadsheet cells rather than typing it into individual fields hundreds of times over. Another benefit of this tool is its ability to exploit the utility of spreadsheet-based programs like Microsoft Excel or Google Sheets to functionally manipulate large quantities of data with ease. Figure 11 shows an example spreadsheet that allowed us to upload 151 unique items, complete with all associated metadata in a matter of seconds.

Figure 11. Mustang (Lowa collection) interview audio data log.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	Title	Subject	Description	Creator	Source	Publisher	Date	Contributor	Format	Language	Type	Identifier	Coverage	File	File 2	Transcription	Original Format
1	Lowa_001_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	28-Jun	Phewa Thang G. mp3	Lowa	Audio Interview	130101_0004	0014	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0014.mp3			
2	Lowa_002_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	28-Jun	Yangshu G. mp3	Lowa	Audio Interview	130104_0014	0014	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0014.mp3			
3	Lowa_003_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	28-Jun	Danchoe Shuk. mp3	Lowa	Audio Interview	130104_0018	0018	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0018.mp3			
4	Lowa_004_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	28-Jun	Phang G. mp3	Lowa	Audio Interview	130104_0018	0018	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0018.mp3			
5	Lowa_005_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	28-Jun	Kang T. mp3	Lowa	Audio Interview	130104_0018	0018	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0018.mp3			
6	Lowa_006_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Yan G. mp3	Lowa	Audio Interview	130105_0021	0021	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0021.mp3			
7	Lowa_007_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Kang L. mp3	Lowa	Audio Interview	130105_0022	0022	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0022.mp3			
8	Lowa_008_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Shang G. mp3	Lowa	Audio Interview	130105_0023	0023	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0023.mp3			
9	Lowa_009_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Nama C. mp3	Lowa	Audio Interview	130105_0024	0024	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0024.mp3			
10	Lowa_010_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Phang G. mp3	Lowa	Audio Interview	130105_0025	0025	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0025.mp3			
11	Lowa_011_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Kang G. mp3	Lowa	Audio Interview	130105_0026	0026	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0026.mp3			
12	Lowa_012_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Phang G. mp3	Lowa	Audio Interview	130105_0028	0028	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0028.mp3			
13	Lowa_013_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	29-Jun	Phang G. mp3	Lowa	Audio Interview	130105_0029	0029	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0029.mp3			
14	Lowa_014_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	30-Jun	Kang G. mp3	Lowa	Audio Interview	130106_0030	0030	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0030.mp3			
15	Lowa_015_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	30-Jun	Kang G. mp3	Lowa	Audio Interview	130106_0031	0031	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0031.mp3			
16	Lowa_016_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	30-Jun	Kang P. mp3	Lowa	Audio Interview	130106_0032	0032	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0032.mp3			
17	Lowa_017_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	30-Jun	Shang G. mp3	Lowa	Audio Interview	130106_0033	0033	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0033.mp3			
18	Lowa_018_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	30-Jun	Yan L. mp3	Lowa	Audio Interview	130106_0035	0035	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0035.mp3			
19	Lowa_019_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	Phang G. mp3	Lowa	Audio Interview	130107_0041	0041	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0041.mp3			
20	Lowa_020_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	M. G. mp3	Lowa	Audio Interview	130107_0042	0042	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0042.mp3			
21	Lowa_021_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	S. G. mp3	Lowa	Audio Interview	130107_0043	0043	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0043.mp3			
22	Lowa_022_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	A. mp3	Lowa	Audio Interview	130107_0044	0044	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0044.mp3			
23	Lowa_023_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	Shang G. mp3	Lowa	Audio Interview	130107_0045	0045	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0045.mp3			
24	Lowa_024_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	1-Jul	Shang G. mp3	Lowa	Audio Interview	130107_0046	0046	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0046.mp3			
25	Lowa_025_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	9-Jul	Yan G. mp3	Lowa	Audio Interview	130115_0055	0055	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0055.mp3			
26	Lowa_026_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	9-Jul	Shang G. mp3	Lowa	Audio Interview	130115_0056	0056	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0056.mp3			
27	Lowa_027_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	11-Jul	K. G. mp3	Lowa	Audio Interview	130117_0064	0064	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0064.mp3			
28	Lowa_028_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	11-Jul	Shang G. mp3	Lowa	Audio Interview	130117_0065	0065	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0065.mp3			
29	Lowa_029_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	11-Jul	Shang G. mp3	Lowa	Audio Interview	130117_0066	0066	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0066.mp3			
30	Lowa_030_AUD	Effects of 2015 E	Interview of a co. Jacob Seteb	Sienna Craig	National Science	12-Jul	Shang G. mp3	Lowa	Audio Interview	130118_0067	0067	2015	Nepal East	http://lib.ual.es/napal-earthquakes/arcchivage/0067.mp3			

5.2 The WordPress exhibit (<https://iris.siue.edu/nepal-earthquakes/>) The goal behind the WordPress exhibit was to bring together the two collections and to situate them in the larger context of Nepal, including its linguistic and ethnic diversity, and the geographic, social, political, and historical situations surrounding the 2015 earthquakes. The home page for this exhibit is shown in Figure 12.

Figure 12. The home page site header and navigation of the WordPress exhibit



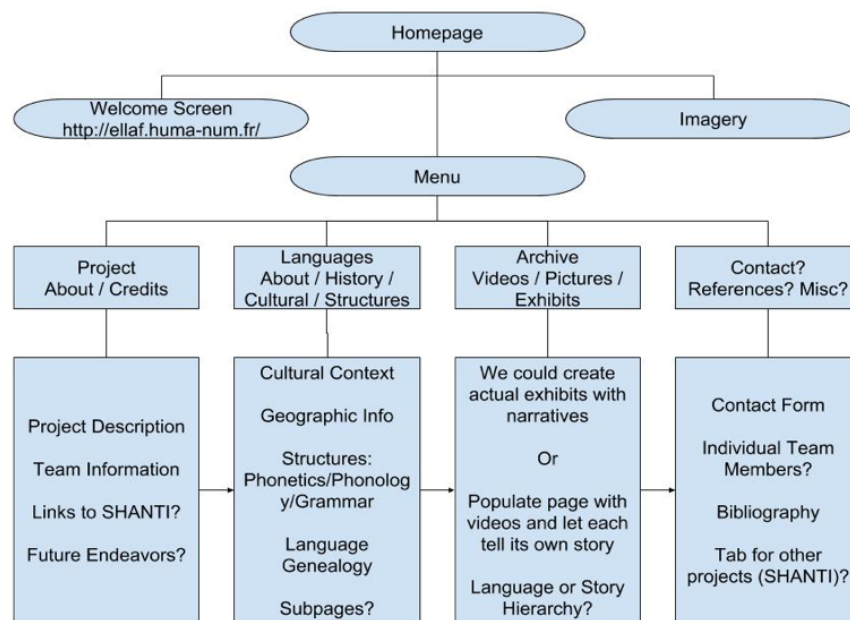
In this figure, one of the Gorkha village sites provides the background for the home page, and the navigation tabs are aligned along the bottom. We wanted an exhibit builder that is simple and clean in design, provides easily accessible information for visitors, and has a variety of display options for both desktop and mobile viewers. We chose WordPress because the home institution has an institutional license and provides instances to project directors, and also because WordPress has many themes to choose from (many of which are free). Additionally, it supports plug-ins (extending the functionality of the site), and it displays well across many different Internet browsers.

One of our first tasks was to choose the theme, as the initial focus in bringing the two archives together was to conduct background research and develop a working view of the exhibit. The chosen theme, Twenty Seventeen,⁹ has these qualities: easy Bootstrap base, simple modifications through the theme customizer, and great native support for viewport widths. With some simple customization, discussed below, we built out the style of the exhibit to provide a solid style base for the Omeka and UVA links. The theme structure chosen fulfills all of these criteria: Each page is presented as a single column of text, displaying the pertinent content without sidebar distraction. The page structure of the exhibit has built in compatibility for screen readers, and has no colored text to accommodate disabled users. Finally, the styling and scripting library, Bootstrap, allows for a multitude of devices to view pages and navigate in a format familiar and tailored to the device.

⁹<https://wordpress.org/themes/twentyseventeen/>.

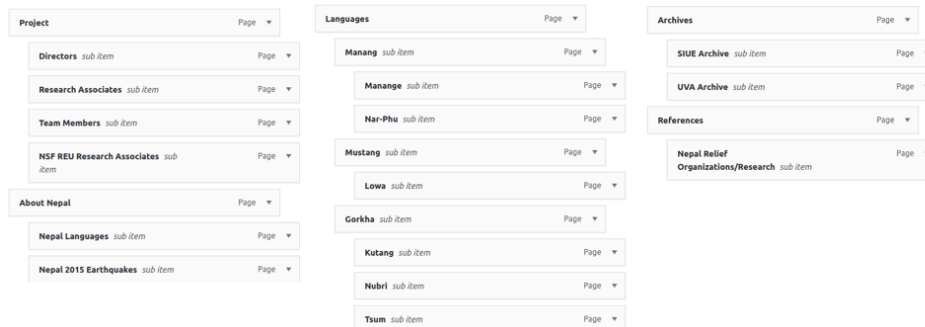
Another step in the process of the exhibit creation was to build mock-ups of the site architecture. Figure 13 shows that these mock-ups were completed as rudimentary flow charts using the free, web-based Google Drawings software. With these requirements and mock-ups lined out, we conceptualized their organization as incorporated into our chosen theme. Figure 13 shows an early mock-up of the site architecture, with pages devoted to the project (personnel, goals), history and languages of Nepal, links to our archive, and references and other resources.

Figure 13. An early mock-up of our Exhibit's homepage and site architecture.



Via project team input and discussion, the mock-up eventually led to the exhibit architecture and organization shown in the site map displayed in Figure 14.

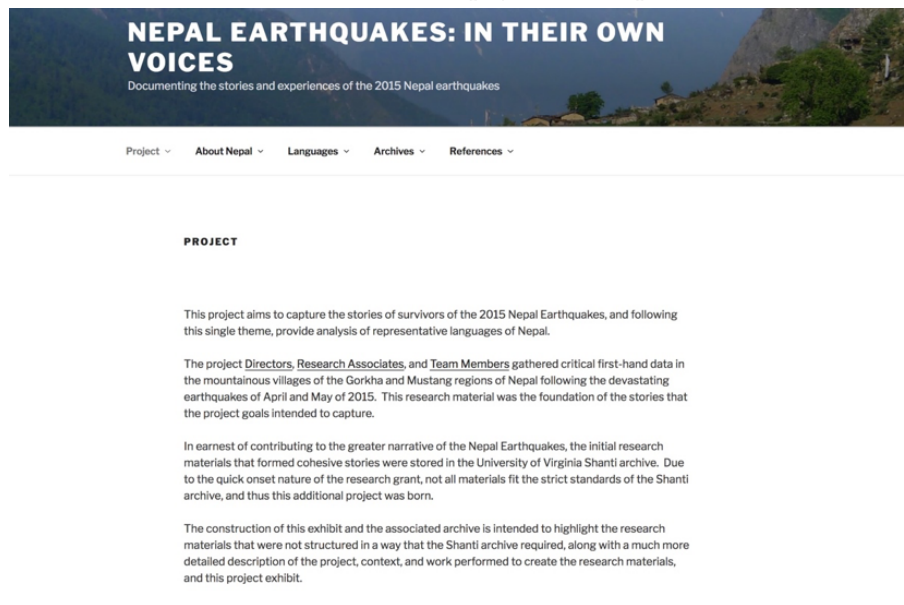
Figure 14. A listing of the page structure in the project exhibit.



With the content platforms selected, the themes chosen were both built upon Bootstrap library styling. Bootstrap is a page style and scripting library that makes alignment and placement of content on a HTML page simple to manage. Bootstrap library has prebuilt style classes for a majority of common HTML design patterns (navigation bars, content grids, image carousels, etc.), so the process of creating the visual style of a web application is relatively simple. The major benefit of using this library as a base for the web application theme is the built-in responsive styling: Designing a theme for a variety of different device sizes is easily accomplished, and allows for our development to focus on what content is shown, not what device is going to be viewing the content.

The below screenshots in Figures 15 through 17 are a sampling of the style of context information pages included with the exhibit.

Figure 15. The ‘About’ content page from the project exhibit.



These pages contain hyperlinks to project team member names, contact information, and photos. They also contain maps, brief summaries, and a joined portal to the two archives. In addition, They include links and reference citations to other resources for visitors who wish to learn more.

6. Challenges and opportunities A significant challenge presented itself from the start, even before the project officially got started. From the outset of the project, the conditions in Nepal confronted us with serious ethical issues that went beyond issues of collaboration and respecting the privacy and dignity of survivors. The project team members were aware that they were asking collaborators to travel long distances over unstable ground in order to reach their natal villages and to then embark upon emotionally demanding work. The trail to Nubri and Tsum, our field areas in

Figure 16. The content page providing a link to the two archives.

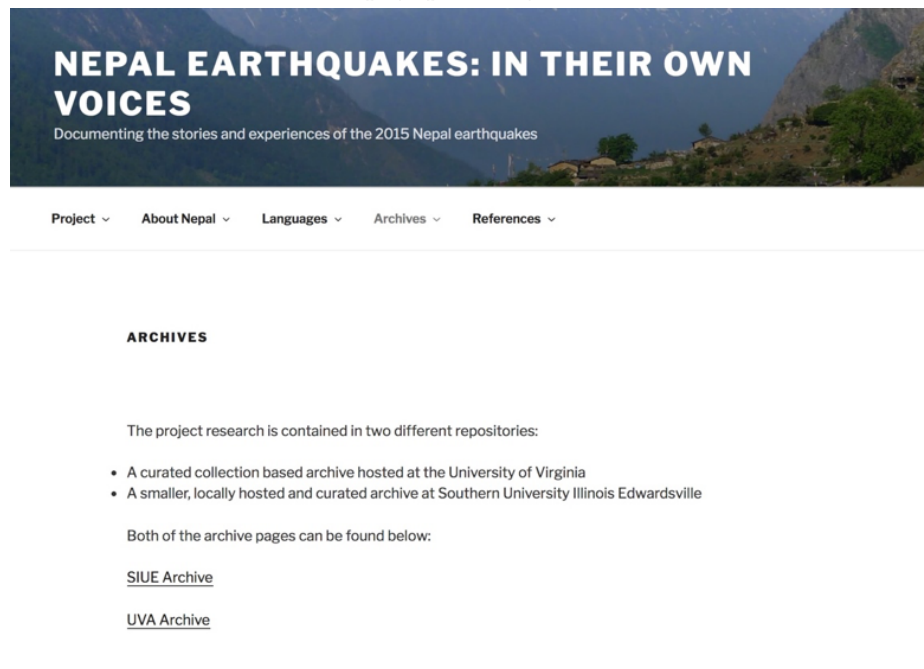
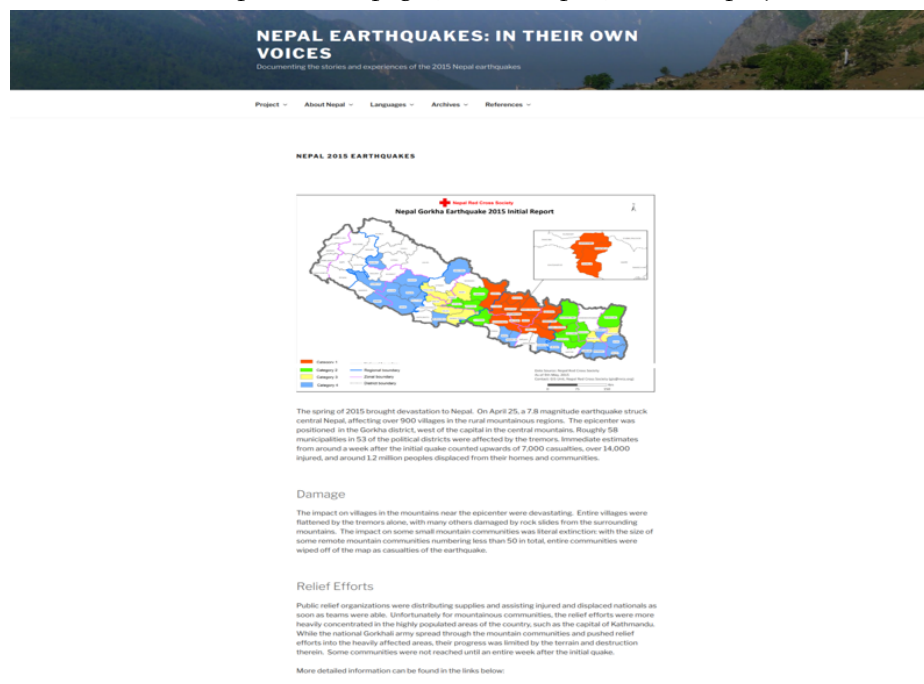


Figure 17. A sample content page ('About Nepal') from the project exhibit.



northern Gorkha District, remained impassable for many months after the earthquake due to recurring landslides. Although they were eager to commence the research, the fieldworkers knew that they had the decision-making abilities as to the feasibility of their journeys only when they were confident that it was not too dangerous. Some research teams, particularly those who went to the field first in Mustang, before the training workshop was offered, met locals who were still waiting anxiously for material aid. Therefore, some interview narratives reflect this frustration, disappointment, or confusion when local participants realized that the teams were armed only with video cameras and audio recorders, not tins of food or cash or medicines. However, after community researchers explained the project, local participants saw the value of creating a public archive of these stories to retain collective memory in these communities and to share them with the wider world. The research teams became careful listeners – witnesses – as people spoke about their feelings of government and aid agency neglect, or exploitation by the international media of ongoing hardships, and even about their understandings of what to do, or not do, in times of emergency.

As may be imagined, a multi-component archival initiative like this, even at a smaller scale, presented us with some challenges. Beyond the initial ethical challenge, the other challenges with designing and building the home institution archive and web exhibit were three-fold, falling into administrative, procedural implementation, and interdisciplinary categories, and often these barriers could be considered as simultaneously some combination of the three. The nature and goal of an NSF REU, however, is not to avoid challenges, or even to expect everything to run seamlessly and without hitches, but rather to view each challenge as its own learning experience and opportunity. Below, the challenges experienced, solutions considered and chosen, and lessons learned from each are explained in detail.

The first problems we encountered when constructing the sites were local administrative policies and their relationship to the trial and implementation of design elements, such as site themes and content plugins. Our institutional framework was such that these types of administrative activities could only be accomplished at a root-level to which the REU interns had no access. Fortunately, we required only a limited number of changes, and these action items were delineated to IT administrators who were prompt in their execution. Once these foundational elements were in place, construction was free to proceed.

It is important to note as well, that administrative status titles within Omeka are not always intuitive. When ascribing the interns their administrative privileges within the instance of this CMS, they were granted ‘admin’ status. This, however, was not sufficient to enact changes at the level required to make unfettered progress on an acceptable timeline. It was not until further analysis that we realized ‘super’ access was actually the level required to make the changes necessary.

The next challenges we encountered were associated with the sheer quantity of data being handled and the solutions required to populate an archive at this level. As mentioned previously, the CSV Import plug-in was chosen to mitigate time expenses associated with redundant work. While this solution presented us with high-efficiency uploading potential, progress was hampered by the dependency of this tool on the

association of the individual data elements with unique static URLs (unchanging web addresses). This hang-up required us to reassess our data-sharing and temporary storage decisions. At first, we shared our data through the institutionally-supported Microsoft OneDrive cloud storage tool, however, this solution locked down sharing to only those users with institutionally-assigned email addresses, a luxury our Omeka site did not possess. Further research showed that recent policy changes in other cloud storage solutions like Google Drive and Dropbox precluded them from proving useful in our attempts to use the CSV Import plug-in.

Ultimately, the creation of folders on the site's FTP (File Transfer Protocol) server held the answer to this problem. We created dedicated folders on the FTP site to serve as transient locations in which to store the files prior to upload. Each file was automatically assigned a static URL by nature of being housed on a server. We could then point the CSV Import tool to these URLs without issue. While not an ideal solution due to effort duplication, the end result saved countless hours of manual data input.

Further complications came from the interdisciplinary and *ad hoc* nature of the project itself. The number of confederates on which the data collection process was contingent inevitably led to the employment of myriad naming schemes, storage solutions, and organization systems. The confluence of these issues resulted in a long process in which we were required to decrypt unique item identifiers, align audio interview files with their associate transcript files, and ensure that all of these elements could be uploaded to the archive in an easily identifiable way. Quite fortuitously, the investigators saw fit to create spreadsheet inventories of these files which made our decryption process easy, and provided additional metadata to further support our quest to create the most comprehensive archive possible with our limited resources.

Another issue inevitably arising from the nature of this RAPID-funded, quickly organized, and interdisciplinary research conducted in the wake of a devastating natural disaster was the use of unfamiliar and inconsistent recording equipment by minimally-trained interviewers. One result was the creation of audio files in different formats. The majority of the files created were .wav, and .wma files, with some additional files in .mp3 and .aac formats. All of these file formats were accepted by the open source Omeka platform, save for the proprietary Windows Media Audio (.wma) file format. However, given the somewhat chaotic scene emergent after the earthquakes and before the field methods workshop held in Kathmandu in 2015, we had to prepare for the possibility that at least some project materials would be in non-optimal formats. In these cases, prior to uploading these files to the archive, we reformatted these materials ('transcoding') into the recommended format (.wav). In order to maintain the standard originally set for the archive, however, we uploaded two copies of these files to the archive: a copy in the original format and a copy in the transcoded format.

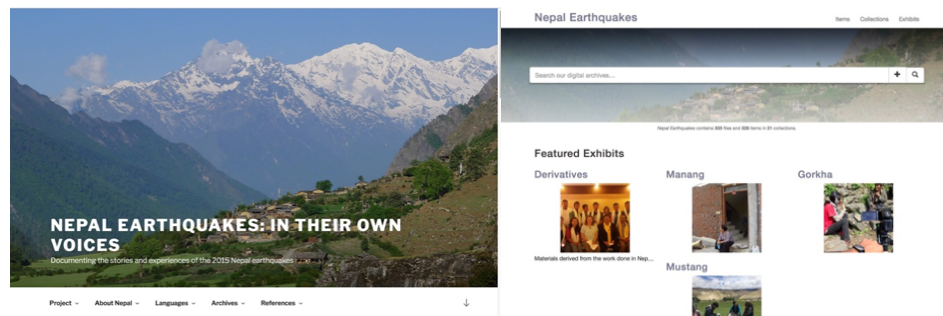
Similarly, though not motivated by the same impetus, the majority of the interview transcripts delivered to us by the fieldworkers and associates in Nepal could not be immediately added to the Omeka archive. The open source nature of Omeka disallows proprietary file types (e.g., Microsoft .doc, .docx, .xls, .xlsx). As with the audio files, we transcoded the respective proprietary files to the .otd (open text document)

format. Also, in similar fashion to the audio files, we uploaded two copies of the text files to the archive: the original and the format-compliant open source copies.

In regard to the interviews and their transcripts, some of the audio interview files had associated transcripts while some did not. Therefore, we had to choose between uploading all transcripts in ascending numerical order, according to our chosen naming scheme, or uploading these transcripts in a manner that respected the naming scheme of the audio files. Ultimately, the association of transcripts with their respective audio files won out, and because of this, gaps exist between the numerical coefficients of transcript file names.

The biggest hurdle in the process of design and implementation of the two sites was the individual customization of the two different themes. One problem with choosing a predesigned theme in WordPress is the limitation of customization built into the theme interface through the content management systems. Theme customization is usually limited to minimal changes in the colors, site headers, and ‘widgets’ that have designated placement in the site structure. Any other customizations of the design have to be made at the source code level of the theme structure. This presented us with a unique problem: how to minimize time spent on the customization of the site, and still accomplish our goals of unified design and presentation. We took a simplified approach by taking all of the best elements of the WordPress chosen theme and making some minor scripting modifications to capture the desired design in the confines of the theme structure. We then performed some more heavy modifications on the Omeka theme to conform to the design of the WordPress theme. The result is a WordPress home page and an Omeka home page that have a striking degree of theme parallelism, as shown in Figure 18.

Figure 18. The result of theme customization in the Word Press exhibit and the Omeka archive.



To be sure, there are certain compromises with the architecture choices made, and they were most apparent once we unified the two instances of WordPress and Omeka. To maintain a completely unified style setup across both instances would have required two individual themes that would have necessitated individual customization. There also had to be sharing of data between both instances to be able to serve research materials in WordPress for visual impact. These were beyond the scope of the goals of this NSF REU experience.

7. Closing comments This paper has provided an overview of the activities that have contributed to the construction of two archives and a companion web exhibit to document and preserve a wide range of materials gathered in connection to survivor narratives and interviews from the 2015 Nepal earthquakes. We have also described the resources and processes employed to construct the archive at the home institution of the project P.I. We wish to emphasize that this paper is not intended to imply that language documentation initiatives should attempt home-designed and locally-housed archival repositories over or instead of other, well established archives. Indeed, these archival repositories have the huge advantage of a dedicated and knowledgeable steering committee plus trained staff, well-established standards for data formatting, encryption, preservation and protection, and of course a great deal of storage space. In our case, we had residual materials which allowed us to make use of local archiving and cataloging resources as a teaching and learning opportunity. We regularly turned to these established archives as inspiration and guidance in our decisions. In the end, to the extent that a locally built exhibit does make the best sense, we hope that by documenting our challenges and our solutions in the construction and customization of these two digital tools (WordPress and Omeka), other users will be able to adopt and adapt in their own endeavors.

We hope that these archival and exhibit resources will be of use to a number of audiences. All participants provided oral informed consent, with the understanding that their experiences would be available for others to witness and learn from. Because the narratives are transcribed into Nepali and English, the materials are open to a broader range of audience types.

In terms of academic impact, the project team members, along with additional and newly incorporated collaborators, are now beginning to use the transcripts as tools towards additional linguistic and cultural anthropological investigations, for example, an analysis of reported speech strategies when recounting major events, and a newly launched study of survivor understandings of earthquake origins and impacts.

In the meantime, there are still some additional materials to upload to the SIUE-based archive (derivative materials, which are regularly being produced via access to the transcripts, and also some still images), and the exhibit will be updated periodically as new information or new initiatives deriving from the 2015 earthquakes in Nepal become available for public access.

As noted at the start of this paper, a number of the languages included in this project are (at the very least) vulnerable, or else severely endangered. Most of these also have little to no published information about their grammar or lexicon beyond what can be found in these narrative and interview transcripts, nor do they have much in the way of transcribed continuous discourse. It is hoped that these materials, housed in the ways that they are, will provide a foundation on which future documentation and preservation initiatives may be built. The materials are open access such that they can be used with proper citation of the project members and funding sources, and the project team members welcome inquiries of future collaboration.

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Appendix A. Project Team Members¹⁰

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Mark Donohue	Co-Investigator, Living Tongues Institute
Nepal-based Research Associates	
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Mr. Bhoj Raj Gautam	Linguistics Instructor, Nepal Academy
Fieldwork Team Members in Nepal	
Lhakpa Hritar	Fieldworker and Nubri language consultant
Lhakpa Norbu	Fieldworker and Nubri language consultant
Jangchuk Sangmo	Fieldworker and Nubri language consultant
Nyima Samdrub	Fieldworker and Nubri language consultant
Tenzin Kunchok	Fieldworker and Tsum language consultant
Namgyal Ngudup	Fieldworker and Tsum language consultant
Pema Norbu	Fieldworker and Tsum language consultant
Tenzin Gyaltzen	Fieldworker and Tsum language consultant
Ngawang Tsering Gurung	Fieldworker and Mustang region consultant
Yangjin Bista	Fieldworker and Mustang region consultant
Karma Choedon Gurung	Fieldworker and Mustang region consultant
Tsewang Gyurme Gurung	Amji (doctor) by training, fieldworker and Mustang region consultant
Sophiya Lama	Fieldworker and Nar-Phu language consultant
Chimi Lama	Fieldworker and Nar-Phu language consultant
Tsering Topden Gurung	Fieldworker and Manange language consultant
Anjana Ghale	Fieldworker and lower Manang District languages consultant
SIUE-based Research Assistants	
Sarah Song	research assistant Academic Year 2016-2017
Kristin Kaskeski	research assistant Summer/Fall 2017
Ishu Jha	research assistant Academic Year 2017-2018
Pratik Lamsal	research assistant Academic Year 2017-2018
Tanner Burge-Beckley	REU intern Academic Year 2017-2018
Jacob Sebok	REU intern Academic Year 2017-2018

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Appendix B. Narratives collected and archived at UVA THL

Recorded in Gorkha District		
Language	Number of narratives	Notes
Tsum	19	
Nubri	17	
Kutang	8	
Recorded in Manang District		
Language	Number of narratives	Notes
Nar	14	
Manange	13	10 audio-video, 3 audio only
Phu	1	
Recorded in Mustang District		
Language	Number of narratives	Notes
Lowa	10	All audio only
Recorded in Kathmandu		
Language	Number of narratives	Notes
Nar	6	One is primarily in Nepali with some Nar
Manange	5	
Phu	1	
Gurung	1	
Tsum	1	Speaker recounts both the 1934 & 2015 earthquakes

Appendix C. Interviews collected and archived at SIUE

Language	Number of interviews	Notes
Lowa	151	In some interviews, heavy Nepali code-switching Former residents who returned to assist with recovery
Nepali	18	
Tibetan	15	
Dokkeh	11	
Baragaun	6	
English	1	

Appendix D. Photos of the fieldworker training workshop, follow-up team meeting, and team members working with speakers.

Figure 19. Photos of the fieldworker training workshop in Kathmandu, June 2015 (left) and follow-up team meeting in September 2015 (right).



Figure 20. Entire RAPID team, June 2015.



Figure 21. Tenzin Gyaltzen (Tsum) working with a Tsum speaker in Gorkha in October 2015.



Figure 22. Tsewang Gyurme Gurung working with a Lowa speaker in Mustang in September 2015.



Figure 23. Research associate Bhoj Raj Gautam working with Tenzin Gyaltzen (Tsum) in December 2015.

